

What Is Claimed Is:

1. A method for generating an image, comprising:

(a) preparing a plurality of first images each of which includes a
5 portion where a same recorded subject is recorded;

(b) determining an image generation area for generating a second
image in which a density of pixels forming image is higher than that of the
first images, based on a overlap between the plurality of first images; and

(c) generating the second image in the image generation area from
10 the plurality of first images.

2. A method for generating an image according to Claim 1, wherein

the determination of the image generation area is executed so that
an overlapping index value representing an extent of overlap between the
15 plurality of first images and the image generation area is closest to a
predetermined target level on a predetermined condition.

3. A method for generating an image according to Claim 1, wherein
the determination of the image generation area comprises:

(b1) preparing a plurality of candidate areas included in a sum area,
20 the sum area being sum of areas in which first images are recorded; and

(b2) selecting one of the candidate areas as the image generation
area from among the plurality of candidate areas, based on an evaluation
value for each of the candidate areas which is determined based on overlaps
25 between the plurality of first images and the candidate area.

4. A method for generating an image according to Claim 3, wherein
the selection of the candidate area comprises

determining the evaluation values for the candidate areas based on
30 relative positions between the candidate areas and the first images.

5. A method for generating an image according to Claim 3, wherein the selection of the candidate area comprises determining the evaluation value based on numbers of pixels in the first images included in portions where the candidate area and the first images overlap.

6. A method for generating an image according to Claim 3, wherein the selection of the candidate area comprises determining the evaluation value for each of the candidate areas, wherein

the determination of the evaluation value for one of the candidate areas comprises:

(b3) determining an evaluation target portion, the evaluation target portion being a portion of a profile of a target candidate area for which the evaluation value is being determined and being included in an area of one of the plurality of first images; and

(b4) determining the evaluation value for the target candidate area based on lengths of the evaluation target portions for the plurality of first images.

7. A method for generating an image according to Claim 3, wherein the selection of the candidate area comprises:

(b3) setting sample points on a profile of each of the candidate areas; and

(b4) determining the evaluation values for the candidate areas based on the sample points, wherein

the determination of the evaluation value for one of candidate areas comprises:

(b5) determining evaluation sample points among the sample points of a target candidate area for which the evaluation value is being determined, the evaluation sample points being sample points included in

an area of one of the plurality of first images; and

(b6) determining the evaluation value for the target candidate area based on a number of the evaluation sample points of the plurality of first images.

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8. A method for generating an image according to Claim 3, wherein the selection of the candidate area comprises:

(b3) setting sample points on a profile of each of the first images;

and

10 (b4) determining the evaluation values for the candidate areas based on the sample points, wherein

the determination of the evaluation value for one of candidate areas comprises:

15 (b5) determining evaluation sample points among the sample points of one of the first images, the evaluation sample points being sample points included in a target candidate area for which the evaluation value is being determined; and

(b6) determining the evaluation value for the target candidate area based on numbers of the evaluation sample points of the plurality of first
20 images.

9. A method for generating an image according to Claim 3, wherein the selection of the candidate area comprises:

25 (b3) setting evaluation areas having a certain width near profiles of the candidate areas; and

(b4) determining the evaluation values for the candidate areas based on the evaluation areas, wherein

the determination of the evaluation value for one of candidate areas comprises:

30 (b5) determining a limited evaluation area, the limited evaluation

area being a portion of a target candidate area for which the evaluation values is being determined, being included in an area of one of the plurality of first images; and

(b6) determining the evaluation value for the target candidate area based on a total number of pixels included in the limited evaluation area of the plurality of first images.

10. A method for generating an image according to Claim 3, wherein

the selection of the candidate area comprises:

(b3) setting sample points near profiles of the candidate areas; and

(b4) determining the evaluation values for the candidate areas based on the sample points, wherein

the determination of the evaluation value for one of candidate areas comprises:

(b5) determining evaluation sample points among the sample points of a target candidate area for which the evaluation value is being determined, the evaluation sample points being sample points included in an area of one of the plurality of first images; and

(b6) determining the evaluation value for the target candidate area based on a number of evaluation sample points for the plurality of first images.

11. A method for generating an image according to Claim 3, wherein

the preparation of the plurality of candidate areas comprises:

(b7) setting a first candidate area included in the sum area being sum of areas in which first images are recorded; and

(b8) preparing:

a second candidate area, which is an area included in the sum area

being sum of areas in which first images are recorded, and which is to conform to the first candidate area by being displaced a certain extent in a first direction, and

a third candidate area, which is an area included in the sum area being sum of areas in which first images are recorded, and which is to conform to the first candidate area by being displaced a certain extent in a direction opposite the first direction.

12. A method for generating an image according to Claim 3, wherein

the preparation of the plurality of candidate areas comprises:

(b7) setting a first candidate area included in the sum area being sum of areas in which first images are recorded; and

(b8) preparing:

a second candidate area, which is an area included in the sum area being sum of areas in which first images are recorded, and which is to conform to the first candidate area by being shrunk around a certain fixed point, and

a third candidate area, which is an area included in the sum area being sum of areas in which first images are recorded, and which is to conform to the first candidate area by being magnified around a certain fixed point.

13. A method for generating an image according to Claim 12, further comprising:

(d) outputting at least one of the plurality of first images through an output device; and

(e) outputting the second image through the output device in a same size as the first image output.

14. A method for generating an image according to Claim 1, further comprising:

(f) calculating relative positions between the plurality of first images based on the portions where the same recorded subject is recorded, wherein
5 each of pixels of the plurality of first images have a tone level, and the generation of the second image comprises:

(c1) selecting, from pixels of the second image, a target pixel for calculating the tone level;

(c2) selecting, from the pixels of the plurality of first images,
10 a plurality of specified pixels located in a certain range near the target pixel when the pixels of the plurality of first images are supposed to be arranged according to the relative positions and pixels of the second image are furthermore supposed to be arranged in the image generation area; and

(c3) calculating tone level of the target pixel based on a
15 weighted average of tone levels of the specified pixels.

15. An image-generating device, comprising:

an imaging component configured to prepare a plurality of first images each of which includes a portion where a same recorded subject is
20 recorded;

a generation area determination component configured to determine an image generation area for generating a second image in which a density of pixels forming image is higher than that of the first images, based on a overlap between the plurality of first images; and

25 an image-generating component configured to generate the second image in the image generation area from the plurality of first images.

16. An image-generating device according to Claim 15, wherein

the generation area determination component determines the image
30 generation area so that an overlapping index value representing an extent

of overlap between the plurality of first images and the image generation area is closest to a predetermined target level on a predetermined condition.

17. An image-generating device according to Claim 15, wherein
the generation area determination component comprises:

a candidate area generation component configured to prepare a plurality of candidate areas included in a sum area, the sum area being sum of areas in which first images are recorded; and

a candidate area selection component configured to select one of the candidate areas as the image generation area from among the plurality of candidate areas, based on an evaluation value for each of the candidate areas which is determined based on overlaps between the plurality of first images and the candidate area.

18. An image-generating device according to Claim 17, wherein the candidate area selection component determines the evaluation values for the candidate areas based on relative positions between the candidate areas and the first images.

19. An image-generating device according to Claim 17, wherein the candidate area selection component determines the evaluation value based on numbers of pixels in the first images included in portions where the candidate area and the first images overlap.

20. An image-generating device according to Claim 17, wherein the candidate area selection component determines the evaluation value for each of the candidate areas, and when determining the evaluation value for one of the candidate areas,

determines an evaluation target portion, the evaluation

target portion being a portion of a profile of a target candidate area for which the evaluation value is being determined and being included in an area of one of the plurality of first images; and

5 determines the evaluation value for the target candidate area based on lengths of the evaluation target portions for the plurality of first images.

21. An image-generating device according to Claim 17, wherein the candidate area selection component

10 determines the evaluation values for the candidate areas based on sample points set on a profile of each of the candidate areas, and when determining the evaluation value for one of candidate areas, determines evaluation sample points among the sample points of a target candidate area for which the evaluation value is being
15 determined, the evaluation sample points being sample points included in an area of one of the plurality of first images; and

determines the evaluation value for the target candidate area based on a number of the evaluation sample points of the plurality of first images.

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22. An image-generating device according to Claim 17, wherein the candidate area selection component

determines the evaluation values for the candidate areas based on sample points set on a profile of each of the first images, and
25 when determining the evaluation value for one of candidate areas, determines evaluation sample points among the sample points of one of the first images, the evaluation sample points being sample points included in a target candidate area for which the evaluation value is being determined; and

30 determines the evaluation value for the target candidate

area based on numbers of the evaluation sample points of the plurality of first images.

23. An image-generating device according to Claim 17, wherein
5 the candidate area selection component

determines the evaluation values for the candidate areas based on evaluation areas set near profiles of the candidate areas with a certain width, and

when determining the evaluation value for one of candidate areas,

10 determines a limited evaluation area, the limited evaluation area being a portion of a target candidate area for which the evaluation values is being determined, being included in an area of one of the plurality of first images; and

determines the evaluation value for the target candidate
15 area based on a total number of pixels included in the limited evaluation area of the plurality of first images.

24. An image-generating device according to Claim 17, wherein
the candidate area selection component

20 determines the evaluation values for the candidate areas based on sample points set near profiles of the candidate areas, and

when determining the evaluation value for one of candidate areas,

determines evaluation sample points among the sample
points of a target candidate area for which the evaluation value is being
25 determined, the evaluation sample points being sample points included in an area of one of the plurality of first images; and

determines the evaluation value for the target candidate
area based on a number of evaluation sample points for the plurality of first
images.

25. An image-generating device according to Claim 17, wherein
the generation area determination component

sets a first candidate area included in the sum area being
sum of areas in which first images are recorded; and

5 prepares:

a second candidate area, which is an area included in
the sum area being sum of areas in which first images are recorded, and
which is to conform to the first candidate area by being displaced a certain
extent in a first direction, and

10 a third candidate area, which is an area included in
the sum area being sum of areas in which first images are recorded, and
which is to conform to the first candidate area by being displaced a certain
extent in a direction opposite the first direction.

15 26. An image-generating device according to Claim 17, wherein
the generation area determination component

sets a first candidate area included in the sum area being
sum of areas in which first images are recorded; and

prepares:

20 a second candidate area, which is an area included in
the sum area being sum of areas in which first images are recorded, and
which is to conform to the first candidate area by being shrunk around a
certain fixed point, and

25 a third candidate area, which is an area included in
the sum area being sum of areas in which first images are recorded, and
which is to conform to the first candidate area by being magnified around a
certain fixed point.

27. An image-generating device according to Claim 26, further
30 comprising

a generated image output component configured to
output at least one of the plurality of first images through an
output device; and

output the second image through the output device in a same
5 size as the first image output.

28. An image-generating device according to Claim 15, further
comprising

a relative position calculating component configured to calculates
10 relative positions between the plurality of first images based on the portions
where the same recorded subject is recorded, wherein

each of pixels of the plurality of first images have a tone level, and
the image-generating component

selects, from pixels of the second image, a target pixel for
15 calculating the tone level;

selects, from the pixels of the plurality of first images, a
plurality of specified pixels located in a certain range near the target pixel
when the pixels of the plurality of first images are supposed to be arranged
according to the relative positions and pixels of the second image are
20 furthermore supposed to be arranged in the image generation area; and

calculates tone level of the target pixel based on a weighted
average of tone levels of the specified pixels.

29. A computer program product for generating an image,
25 comprising:

a computer-readable recording medium; and

a computer program stored on the computer-readable recording
medium, wherein

the computer program comprises

30 a first portion for preparing a plurality of first images each of

which includes a portion where a same recorded subject is recorded;

a second portion for determining an image generation area for generating a second image in which a density of pixels forming image is higher than that of the first images, based on a overlap between the plurality of first images; and

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a third portion for generating the second image in the image generation area from the plurality of first images.